AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) An apparatus for reducing the post-detonation pressure of a perforating gun, the apparatus comprising:

a perforating gun carrying at least one explosive charge, wherein when the explosive charge is detonated the explosive charge produces a pressurized detonation gas; and

a pressure reducer in functional connection with the perforating gun, the pressure reducer adapted to reduce the pressure of the detonation gas.

2. (original) The apparatus of claim 1 wherein the pressure reducer is positioned proximate the perforating gun.

3. (currently amended) The apparatus of claim 1 wherein the pressure reducer is positioned [[disposed]] in the perforating gun.

4. (original) The apparatus of claim 1 wherein the pressure reducer is part of the perforating gun.

5. (original) The apparatus of claim 1 wherein the pressure reducer includes a heat sink adapted for rapidly reducing the temperature of the detonation gas.

6. (original) The apparatus of claim 5 wherein the heat sink has a high thermal conductivity.

7. (original) The apparatus of claim 5 wherein the heat sink has a large heat capacity.

8. (original) The apparatus of claim 5 wherein the heat sink includes copper.

9. (original) The apparatus of claim 5 wherein the heat sink includes water.

10. (original) The apparatus of claim 5 wherein the heat sink includes microencapsulated water beads.

11. (original) The apparatus of claim 1 wherein the pressure reducer includes a reactant adapted for recombining with the detonation gas to reduce the molar density of the detonation gas.

12. (original) The apparatus of claim 11 wherein in the reactant is selected from the group consisting of Al, Ca, Li, Mg, Ta, Ti, Zr, and combinations thereof.

13. (original) The apparatus of claim 1 wherein the pressure reducer includes a pressure compression section in functional connection with a gun.

14. (original) The apparatus of claim 13 wherein the compression section includes a compressible material.

15. (original) The apparatus of claim 14 wherein the compressible material is a spring.

16. (original) The apparatus of claim 14 wherein the compressible material is a solid.

17. (original) The apparatus of claim 14 wherein the compressible material is a fluid.

18. (original) The apparatus of claim 5 wherein the pressure reducer is positioned proximate the perforating gun.

19. (original) The apparatus of claim 11 wherein the pressure reducer is positioned proximate the perforating gun.

20. (original) The apparatus of claim 14 wherein the pressure reducer is positioned proximate the perforating gun.

21. (currently amended) The apparatus of claim 5 wherein the pressure reducer is positioned [[disposed]] in the perforating gun.

22. (currently amended) The apparatus of claim 11 wherein the pressure reducer is positioned [[disposed]] in the perforating gun.

23. (currently amended) The apparatus of claim 14 wherein the pressure reducer is positioned [[disposed]] in the perforating gun.

24. (currently amended) The apparatus of claim 5[[1]] wherein the pressure reducer is part of the perforating gun.

25. (original) The apparatus of claim 11 wherein the pressure reducer is part of the perforating gun.

26. (original) The apparatus of claim 14 wherein the pressure reducer is part of the perforating gun.

27. (original) An apparatus for reducing the post-detonation pressure of a perforating gun, the apparatus comprising:

a perforating gun carrying at least one explosive charge, wherein when the explosive charge is detonated the explosive charge produces a pressurized detonation gas;

a temperature reducer in functional connection with the perforating gun, the temperature reducer adapted for reducing the temperature of the detonation gas; and

a molar density reducer in functional connection with the perforating gun, the molar density reducer adapted for reducing the molar density of the detonation gas.

28. (currently amended) The apparatus of claim [[37]] 27 wherein the temperature reducer is positioned [[The apparatus of claim 37 wherein the temperature reducer is positioned]] proximate the perforating gun.

29. (currently amended) The apparatus of claim [[37]] 27 wherein the temperature reducer is positioned in the perforating gun.

30. (currently amended) The apparatus of claim [[37]] 27 wherein the temperature reducer is part of the perforating gun.

31. (currently amended) The apparatus of claim [[37]] 27 wherein the molar density reducer is positioned proximate the perforating gun.

32. (currently amended) The apparatus of claim [[37]] 27 wherein the molar density reducer is positioned in the perforating gun.

33. (currently amended) The apparatus of claim [[37]] 27 wherein the molar density reducer is part of the perforating gun.

34. (original) The apparatus of claim 27 wherein the temperature reducer includes a heat sink adapted for rapidly reducing the temperature of the detonation gas.

35. (original) The apparatus of claim 34 wherein the heat sink has a high thermal conductivity.

36. (original) The apparatus of claim 34 wherein the heat sink has a large heat capacity.

37. (original) The apparatus of claim 34 wherein the heat sink includes copper.

38. (original) The apparatus of claim 34 wherein the heat sink includes water.

39. (original) The apparatus of claim 34 wherein the heat sink includes microencapsulated water beads.

40. (original) The apparatus of claim 27 wherein the molar density reducer is a reactant adapted for recombining with the detonation gas to form solids.

41. (original) The apparatus of claim 34 wherein the molar density reducer is a reactant adapted for recombining with the detonation gas to form solids.

42. (original) The apparatus of claim 27 wherein the temperature reducer and the molar density reducer include a pressure compression section in functional connection with a gun chamber.

43. (original) The apparatus of claim 42 wherein the compression section includes a compressible material.

44. (original) The apparatus of claim 40 wherein the temperature reducer and the molar density reducer include a pressure compression section in functional connection with a gun chamber.

45. (original) The apparatus of claim 41 wherein the temperature reducer and the molar density reducer include a pressure compression section in functional connection with a gun chamber.

46. (original) A method of reducing the post-detonation pressure of a perforating gun comprising the steps of:

providing a perforating gun having explosive charges;

detonating the explosive charges producing a pressurized detonation gas; and

reducing the detonation gas pressure proximate the perforating gun to encourage a surge flow from a reservoir formation.

47. (original) The method of claim 46 wherein the detonation gas pressure is reduced by rapidly reducing the temperature of the detonation gas.

48. (original) The method of claim 46 wherein the detonation gas pressure is reduced by reducing the molar density of the detonation gas.

49. (original) The method of claim 47 wherein the detonation gas pressure is reduced by reducing the molar density of the detonation gas.

50. (original) The method of claim 46 wherein the step of reducing the detonation gas pressure includes providing a heat sink in functional connection with the perforating gun adapted for reducing the temperature of the detonation gas.

51. (original) The method of claim 46 wherein the step of reducing the gas pressure includes the providing a compression section in functional connection with the perforating gun for reducing the pressure of the detonation gas.

52. (original) The method of claim 46 wherein including the step of reducing the gas pressure includes providing a reactant adapted for recombining with the detonation gas to form solids.

53. (original) The method of claim 50 wherein the heat sink includes copper.

54. (original) The method of claim 50 wherein the heat sink includes water.

55. (original) The method of claim 51 wherein the compression section includes a compressible spring.

56. (original) The method of claim 51 wherein the compression section includes a compressible fluid.

57. (original) The method of claim 51 wherein the compression section includes a compressible solid.

58. (original) The method of claim 51 wherein in the reactant is selected from the group consisting of Al, Ca, Li, Mg, Ta, Ti, Zr, and combinations thereof.